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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,009	09/24/2003	Yoshinobu Takeyama	242228US2	1795
22850	7590	06/23/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			ELLIS, SUEZU Y	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 06/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/669,009

Applicant(s)

TAKEYAMA ET AL.

Examiner

Suezu Ellis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-9,11 and 12 is/are rejected.
- 7) ☒ Claim(s) 3,4 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                    |                                                                             |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____                                                |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____                                                                        | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on December 24, 2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the switching unit (claim 11) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

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and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

The disclosure is objected to because of the following informalities: Misspelling and grammatical errors. Suggested corrections are as follows:

Page 7, line 19, replace "leaser" with --laser--.

Page 11, line 11, replace "is change" with --is changed--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 7, it is unclear as to what applicant means when the image forming apparatus is booted. Does applicant mean when the apparatus is turned on? For examining purposes, the claim will be treated as the apparatus is turned on.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5-8 and 12 rejected under 35 U.S.C. 103(a) as being obvious over Japanese patent JP 2001-180043 (Maeda). See pre-grant publication 2001/0028387 for translation purposes.

With respect to claim 1, 2 and 12, Maeda illustrates in Figs. 11 and 27, an image forming apparatus comprising a plurality of optical systems and optical carriers, wherein each system scans a surface of the image carrier with a laser beam [0105]. Maeda further discloses a plurality of first detectors that are disposed at a first position along the main scanning direction of the laser. Although Maeda fails to expressly disclose in Fig. 27, a plurality of second detecting units disposed at a second position along the main scanning direction of the laser, Maeda does disclose in Fig. 2, it is well known for a single system to have both first and second detecting units disposed at a first and a second position along the main scanning direction of the laser. Thus, it would be an obvious design choice that both optical systems in Fig. 27 would have a first and

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second detecting unit as well, in order to detect the start and end of the scanning direction. In reference to Fig. 2, Maeda discloses when the laser scans both of the sensors (201 and 202), the sensors may output synchronization detection signals DETP 1 and DETP 2, respectively. Maeda discloses the clock frequency is adjusted via magnification correction section ([0085]). Maeda further discloses a time difference counting section measures the time difference between the generation time periods of DETP 1 and DETP 2, where section includes a counter that will be reset by the DETP 1 and start counting write clocks that are generated via a write clock generator ([0085], [0089]). Maeda further discloses the inclusion of a reference lock generator (208) to create reference counts. Fig. 9 illustrates the adjustment of the write clock frequency so as to coincide with the reference value.

With respect to claim 5, the modified Maeda discloses that when selecting a reference value (prescribed amount), the clock frequency adjusting unit selects a time difference substantially equal to a reference time difference thus the adjustment can be substantially precise, thus the amount of adjustment is a minimum ([0091]).

With respect to claim 6, the modified Maeda fails to expressly disclose the second detecting unit being a linear charge-coupled device (CCD), however it is well known in the art to use a linear CCD as a sensor. It would have been an obvious design choice to modify the second detecting unit to be a linear CCD since CCDs are readily available.

With respect to claim 7, the modified Maeda discloses the adjustment of the write clock frequency (magnification correction) occurs when image formation begins ([0185]).

With respect to claim 8, the modified Maeda discloses a temperature detector that detects and ambient temperature (initial temperature of the f $\theta$  lens) and a determining unit that detects whether a change in predetermined time ([0026], line 7; [0029]; [0135]). The modified Maeda further discloses the clock frequency adjusting unit (magnification correction section) adjusts the write clock frequency based upon the temperature. Since the adjustment is made in accordance with the temperature, there must be a determining unit/comparison means to determine the difference in the temperatures.

Claim 9 is rejected under 35 U.S.C. 103(a) as being obvious over Maeda in view of Neary (US 6,151,152).

With respect to claim 9, the modified Maeda addresses all the limitations of claim 1. The modified Maeda fails to disclose the period (time difference) measured from the first detecting unit to the second detecting unit until the units detect the laser, is averaged. Maeda and Neary are directed to a similar field of endeavor of scanning systems. Neary discloses it is well known to calculate and average time value for the time difference (col. 3, lines 46-58). It would have been obvious to a person of ordinary skill in the art to calculate an average time value in order to correct the reference frequency error to adjust the reference frequency.

Claim 11 is rejected under 35 U.S.C. 103(a) as being obvious over Maeda in view of Takeyama et al. (US 6,256,461).

With respect to claim 11, the modified Maeda addresses all the limitations of claim 1. The modified Maeda further discloses in Fig. 11 an intermediate transfer body (B), a plurality of image forming units opposite to the moving surface of the intermediate transfer body, where each image forming unit includes an image carrier (109), a writing unit (Fig. 16), and a plurality of developing units (108). Maeda fails to expressly disclose a switching unit. Takeyama and Maeda are directed to a similar field of endeavor of image forming apparatuses. It would have been obvious to a person of ordinary skill in the art to include a switching unit in order to select and drive the developing units, as taught by Takeyama (col. 2, lines 44-48).

#### ***Allowable Subject Matter***

Claims 3, 4 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claim 3, prior art fails to teach or reasonably suggest, either singly or in combination, the clock frequency adjusting unit counts the number of clocks of a write clock during a period since any of the first, second and third detecting units detects the corresponding laser until any of the adjoining first, second, and third



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detecting units detects the corresponding laser, in addition to the other limitations of the claim.

With respect to claim 4, prior art fails to teach or reasonably suggest, either singly or in combination, the clock frequency adjusting unit, comprising a phase-locked loop with variable filters, multiplies a reference clock by a multiple N and varies the number of filters in the phase-locked loop and the multiple N to adjust the write clock frequency.

With respect to claim 10, prior art fails to teach or reasonably suggest, either singly or in combination, a condition of the image forming process is set after the clock frequency adjusting unit performs the adjustment of the write clock frequency.

#### ***Telephone/Fax Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suez Ellis whose telephone number is 571-272-2868. The examiner can normally be reached on 8:30am-7pm (Monday-Thursday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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